The
BIGELOW
COMPANY
NEW HAVEN, CONN.

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BIGELOW PRODUCTS

THE Bigelow Company manufactures the following types of boilers and is therefore able to recommend without prejudice, the most suitable boiler for their customers' needs.

THE BIGELOW-HORNSBY WATER TUBE BOILER
Built in units of 375 HP to 3,000 HP.

THE BIGELOW VERTICAL THREE DRUM WATER TUBE BOILER
Built in units of 200 HP to 2,500 HP.

THE BIGELOW WATER COOLED WALLS

THE BIGELOW INTEGRAL STEEL ECONOMIZER

THE BIGELOW LOW HEAD WATER TUBE BOILER
Built in units of 75 HP to 500 HP.

THE BIGELOW HORIZONTAL RETURN TUBULAR BOILER
Built in units of 25 HP to 300 HP.

THE BIGELOW TWO-PASS BOILER
Built in units of 25 HP to 200 HP.

THE BIGELOW MANNING BOILER
Built in units of 100 to 400 HP.

THE BIGELOW UPRIGHT BOILER
Built in units of 3 to 100 HP.

THE BIGELOW ELECTRIC STEAM GENERATOR
Built in units of 12KW to 6,000KW (10KW equivalent to 1 HP)

Literature on any or all of the above types of boilers gladly furnished on application.

In addition to the manufacture of steam boilers, our facilities are such that we are able to build any special pressure vessels as are used in the Refrigeration or Chemical industries, Rendering Plants, Rubber Vulcanizing, etc., Heat Transfer Vessels, and General plate steel work.

THE BIGELOW COMPANY

TODAY The Bigelow Company is the largest and oldest manufacturer of steam boilers in the New England States.

In 1833 Mr. Cyprian Wilcox started a foundry and machine shop in New Haven, Conn., on what was known as the Farmington Canal. The business of the company developed into the manufacture of water wheels, engines and boilers, and in 1860 this company was established. Gradually the manufacture of boilers became its principal product. From this time until 1905 the Bigelow H. R. T. and Bigelow Manning were the principal types of boilers manufactured. During this time it was recognized that our manufacturing facilities were of the best and a number of steam drums for prominent water tube boiler manufacturers were made in the plant of The Bigelow Company. This was at the time that the lap joint type was being replaced by the butt strap type of joint.

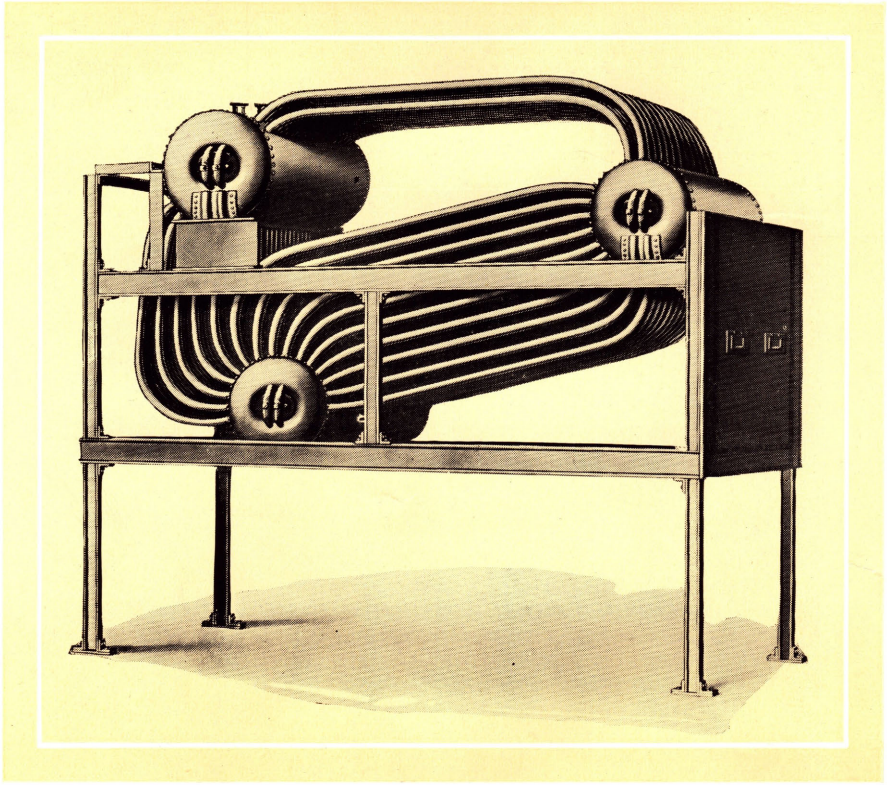
Realizing that the water tube boiler was a type suitable for larger units and higher pressure than the fire tube type, The Bigelow Company in 1905 obtained from the Richard-Hornsby Co. of Grantham, England, the rights for the manufacture of the Hornsby water tube boiler. The original boiler was redesigned and the Bigelow-Hornsby Water Tube Boiler was added as one of our products. Since this time other types of water tube boilers and steam generating equipment have been added to our line of products.

Shop Equipment and Methods

IN modern boiler construction, shop equipment and shop efficiency are factors of paramount importance in determining the quality of work produced. We have a complete equipment of the best that modern engineering skill can devise for the manufacturing of high-grade boilers. Every boiler is routed through the shops to get the highest efficiency in handling the materials from the commencement of operations until the finished product is loaded on the cars. In addition to the methods and machinery, we have a force of mechanics of the highest skill and long experience, thoroughly imbued with the Bigelow standards of quality.

THE BIGELOW COMPANY

Bigelow
Low Head Water Tube
Boilers



THE BIGELOW COMPANY

Established 1860

Office and Works

NEW HAVEN, CONNECTICUT

Bigelow Low-Head Water Tube Boilers For Power and Heating

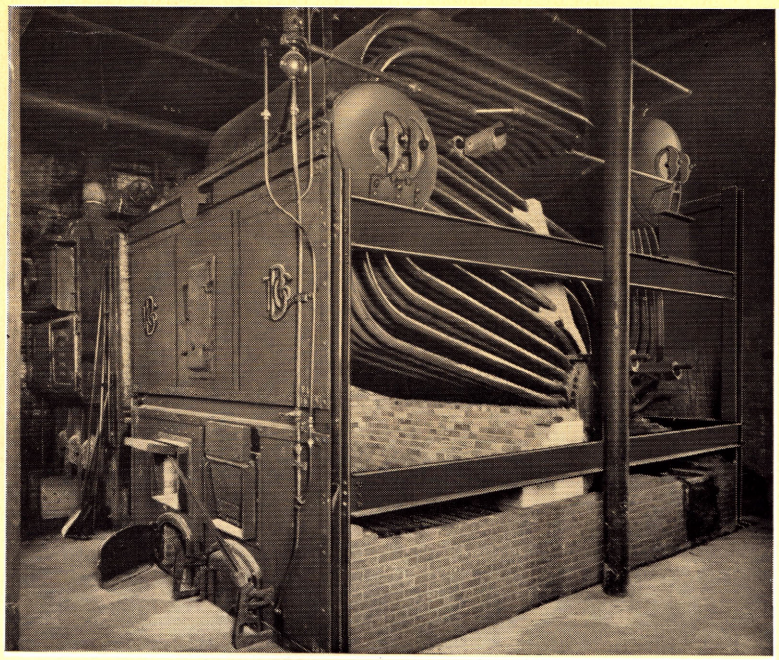
THE BIGELOW Low-Head Water Tube Boiler is offered where the working pressure or space conditions do not lend themselves to the use of a boiler of the fire tube type.

It is constructed in several types of varying lengths and each type is made in a number of sizes.

They are designed for any practical steam pressure, as well as for low pressure heating duty and range in sizes from about 750 sq. ft. of water heating surface up to units having about 5,000 sq. ft.

Design of Boiler

The BIGELOW Low-Head Water Tube Boiler consists of three drums interconnected by rows or banks of 3¼" diameter tubes. The feed water is introduced into the rear upper drum where it enters a feed pan which distributes the water across the entire length of this drum. The water then passes down slowly through the rear



Installation of one 240 H. P. Bigelow Low-Head Water Tube Boiler for the A. C. Gilbert Co., New Haven, Conn. Photograph taken during erection with side and rear walls unfinished.

bank of tubes into the bottom drum. At this point the water then enters the path of circulation. Steam and water pass to the rear upper drum through rows or banks of tubes where the steam is disengaged, leaving the boiler through the steam outlet nozzle placed on the top of this drum.

Furnace

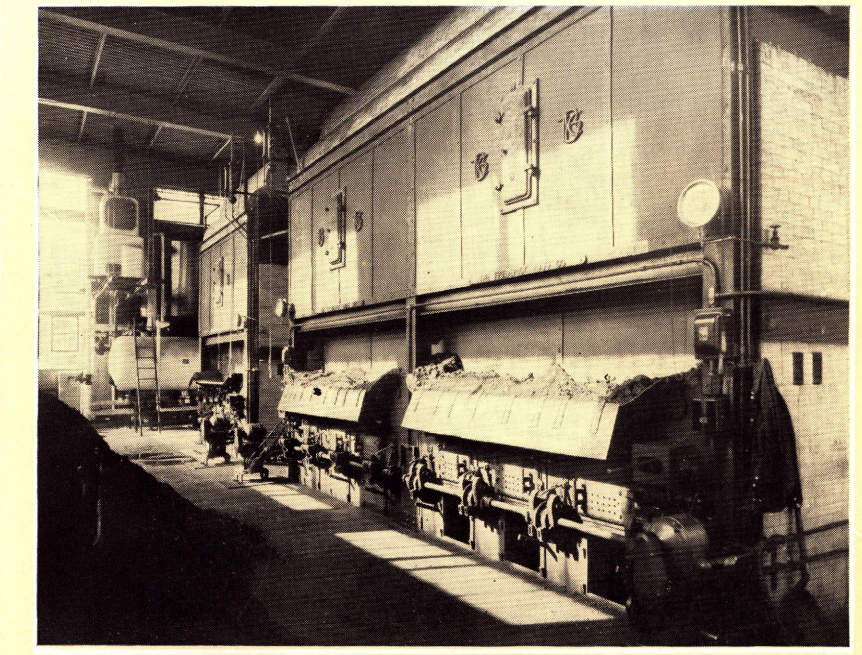
The furnace or combustion chamber can be designed to meet the requirements of any standard type of stoker, pulverized fuel, oil or gas burner, or for hand firing.

Power and High Pressure Heating Boilers

All boilers of this type designed for carrying more than 15 lb. steam pressure have the longitudinal seams of the double butt joint type, and the construction and workmanship throughout is in accordance with the requirements of the American Society of Mechanical Engineers or Massachusetts State Laws. A manufacturer's inspection certificate from a reliable boiler insurance company is furnished with all boilers.

Efficiency

The BIGELOW Low-Head Water Tube Boiler is designed so as to obtain a maximum absorption of the heat. The cross sectional area of the passage of the gases is baffled so as to properly take care of the shrinkage in the gas volume as it passes over the heating surface. Our baffling is designed to provide a minimum draft loss.



Installation of three 306 HP Bigelow Low Head Water Tube Boilers, at the Mansfield State Training School, Mansfield, Conn.

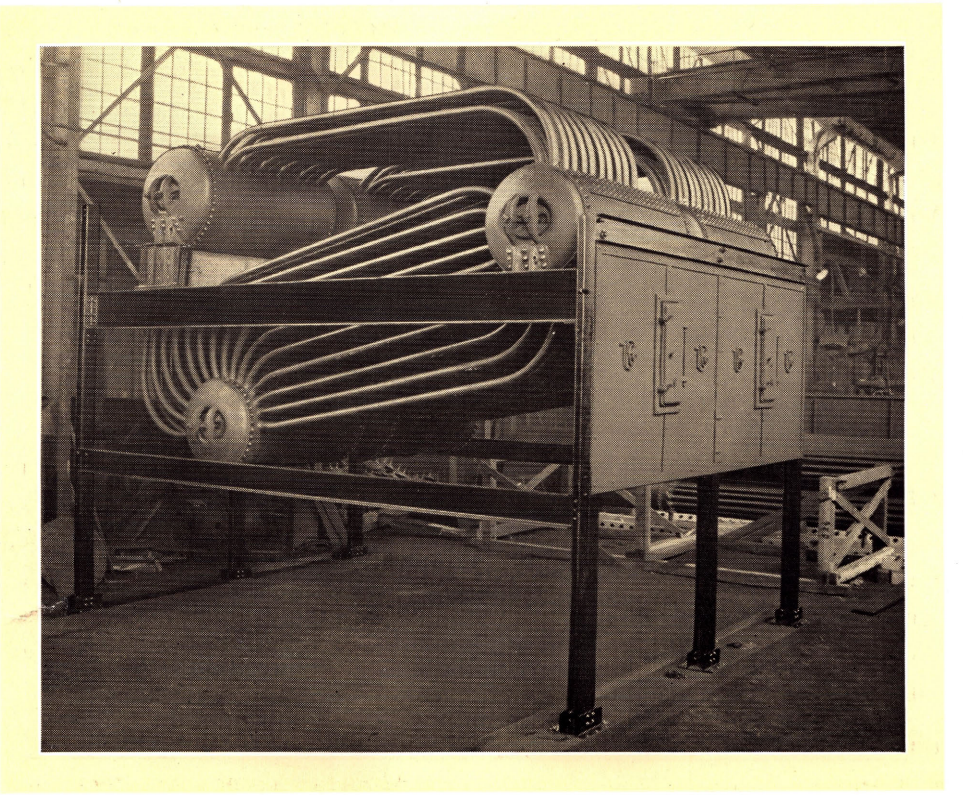
Hand-Fired Boilers

Unless otherwise specified, all of our hand-fired boilers are equipped with shaking grates. The fire door openings are of large dimensions and the doors are of the balanced inswinging type which com-

plies with the most recent State Laws in relation thereto.

Shipping Limitations

BIGELOW Low-Head Water Tube Boilers in sizes not greater than a five-foot furnace width can be shipped completely assembled. Larger sizes are shipped "knocked-down". It requires only a doorway opening four feet wide to admit any part of the largest size of Low-Head Boiler when shipped in a "knocked-down" condition.



Two Bigelow Low-Head Water Tube Boilers, set up in shop before shipment, for the Brownsville and East New York Hospital. Boilers are arranged for battery setting with lower front omitted for stoker firing.

Equipment

As standard equipment we furnish in addition to the boiler proper, the steel gallows, upper fronts (lower fronts with fire and ash doors, and shaking grate bars, for all hand-fired boilers), safety valves, steam gauge, high and low alarm column complete, check valves, globe valves, blow-off valve and cock in tandem, and the necessary access doors for installation in the brickwork. Each boiler drum is fitted with a 12″ x 16″ manhole complete for giving access to the interior of the boiler drums.

For stoker-fired boilers we do not include the lower fire fronts. For oil or gas fired boilers we do not include grate bars, grate rests, or fire or ash pit doors.

Setting Heights

Our standard setting heights for stoker-fired boilers will conform with the height agreement adopted by the American Boiler

Manufacturers' and the Stoker Manufacturers' Associations in 1922. For hand-fired settings, we recommend where possible that the center line of the bottom drum be placed at least 6′ above the floor line.

Battery Setting

The BIGELOW Low-Head Water Tube Boiler can be set in batteries of two units if so desired by the purchaser.

Distinctive Features of the Low Head Boiler

We list below some of the more distinctive features inherent in the BIGELOW Low-Head Water Tube Boiler design that are worthy of careful consideration.

1. A minimum amount of floor space as well as a minimum amount of height is required.
2. There are no cast iron parts under pressure—all parts under pressure being of wrought steel.
3. Boiler can be provided with a furnace of proper design and volume for obtaining best combustion results, whether fired with bituminous or anthracite coal, gas, oil, or wood.
4. A minimum amount of brickwork per horse-power is required.
5. Boiler does not have any staybolts, crown bars, braces, or hand-holes as are necessary in some other types of boilers.
6. Tubes are so spaced that any tube can be removed and replaced without removal of any other tube.
7. Minimum space is required in front of boiler for tube removal.
8. Opening of three manholes makes entire inner surface ready for cleaning.

Damper Location

The standard location of the damper plate to receive breeching or stack is on the top and at the rear of the setting. This damper can also be located in the rear wall near the top of same if so desired.

Steel vs. Cast Iron Boilers

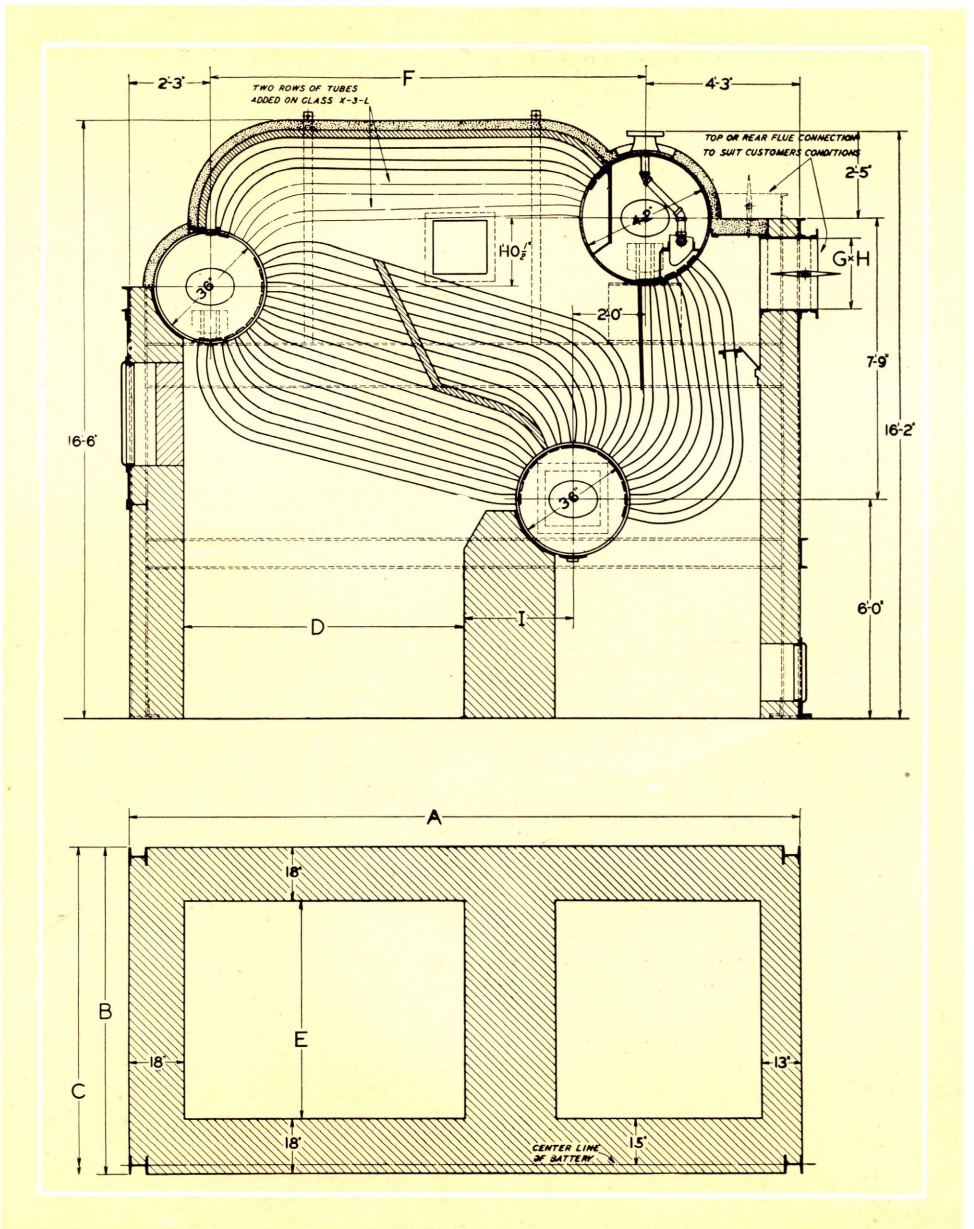
Architects and engineers have heretofore been obliged to use cast iron boilers in some of their low pressure heating for the reason that none of the types of steel boilers built in units small enough to meet their particular needs were of such design as to permit being taken into the building through doors or openings of moderate size. This objection is eliminated in using the BIGELOW Low-Head Water Tube Boiler.

Its Use

The BIGELOW Low-Head Water Tube Boiler is designed to meet the needs of medium and small Industrial Plants, Office Buildings, Hotels, Schools, Apartments, Greenhouses, Laundries, Dairies, and in fact anyone needing a steam boiler between 75 H. P. and 350 H. P.

Reliability

After taking into consideration all of the points pertaining to the BIGELOW Low-Head design as well as our manufacturing facilities, the purchaser should not overlook the fact that in buying a BIGELOW Boiler, he is placing his order with a company which has been manufacturing high pressure steam boilers for over 60 years, and that the same high standards are built into this Low-Head Boiler as into our other types.



The standard distance from the floor to the center line of the mud drum is 6 ft. Conditions may make it advisable to vary this dimension, which will correspondingly change the height of the setting and distance from the floor to the steam nozzle.

Class	Tubes Wide	Heat'g Surface	Setting			Standard Furnace		Center to Center Top Drums	Flue Neck		C.L.Mud Drum to Face of Bridge Wall	Size of Steam Outlet	Size of Feed	Size of Blow Off
			Depth	Single Width	Bat'ry Width	Depth	Width		Width	Height				
			A	B	C	D	E	F	G	H	I			
	6	835	16′0″	6′0″	11′0″	6′0″	3′0″	9′6″	2′6″	1′8″	2′3″	4″	1½″	1½″
	8	1113	16′0″	7′0″	13′0″	6′0″	4′0″	9′6″	3′6″	1′8″	2′3″	4″	1½″	1½″
	10	1391	16′0″	8′0″	15′6″	6′0″	5′0″	9′6″	4′0″	1′8″	2′3″	4″	1½″	2 ″
LH3-A	12	1670	16′0″	9′0″	17′6″	6′0″	6′0″	9′6″	5′0″	1′8″	2′3″	4″	1½″	2 ″
	14	1948	16′0″	10′0″	19′6″	6′0″	7′0″	9′6″	6′0″	1′8″	2′3″	5″	2 ″	2 ″
	16	2226	16′0″	11′0″	21′6″	6′0″	8′0″	9′6″	6′6″	1′8″	2′3″	5″	2 ″	2 ″
	18	2504	16′0″	12′0″	23′6″	6′0″	9′0″	9′6″	7′6″	1′8″	2′3″	5″	2 ″	2½″
	20	2783	16′0″	13′0″	25′6″	6′0″	10′0″	9′6″	8′0″	1′8″	2′3″	5″	2 ″	2½″
	6	1017	18′6″	6′0″	11′0″	7′0″	3′0″	12′0″	2′6″	2′2″	3′9″	4″	1½″	1½″
	8	1356	18′6″	7′0″	13′0″	7′0″	4′0″	12′0″	3′0″	2′2″	3′9″	4″	1½″	2 ″
	10	1695	18′6″	8′0″	15′6″	7′0″	5′0″	12′0″	4′0″	2′2″	3′9″	5″	1½″	2″
	12	2033	18′6″	9′0″	17′6″	7′0″	6′0″	12′0″	4′6″	2′2″	3′9″	5″	2 ″	2″
LH3-B	14	2372	18′6″	10′0″	19′6″	7′0″	7′0″	12′0″	5′6″	2′2″	3′9″	5″	2 ″	2½″
	16	2711	18′6″	11′0″	21′6″	7′0″	8′0″	12′0″	6′0″	2′2″	3′9″	5″	2 ″	2½″
	18	3050	18′6″	12′0″	23′6″	7′0″	9′0″	12′0″	7′0″	2′2″	3′9″	5″	2 ″	2½″
	20	3389	18′6″	13′0″	25′6″	7′0″	10′0″	12′0″	8′0″	2′2″	3′9″	6″	2 ″	2½″
	6	1020	21′0″	6′0″	11′0″	8′0″	3′0″	14′6″	2′6″	2′2″	5′3″	4″	1½	2 ″
	8	1360	21′0″	7′0″	13′0″	8′0″	4′0″	14′6″	3′6″	2′2″	5′3″	4″	1½″	2 ″
	10	1700	21′0″	8′0″	15′6″	8′0″	5′0″	14′6″	4′6″	2′2″	5′3″	5″	2 ″	2 ″
	12	2040	21′0″	9′0″	17′6″	8′0″	6′0″	14′6″	5′6″	2′2″	5′3″	5″	2 ″	2 ″
	14	2380	21′0″	10′0″	19′6″	8′0″	7′0″	14′6″	6′0″	2′2″	5′3″	5″	2 ″	2½″
X3K	16	2720	21′0″	11′0″	21′6″	8′0″	8′0″	14′6″	7′0″	2′2″	5′3″	5″	2 ″	2½″
	18	3060	21′0″	12′0″	23′6″	8′0″	9′0″	14′6″	8′0″	2′2″	5′3″	6″	2 ″	2½″
	20	3400	21′0″	13′0″	25′6″	8′0″	10′0″	14′6″	8′6″	2′2″	5′3″	6″	2½″	2½″
	22	3740	21′0″	14′0″	27′6″	8′0″	11′0″	14′6″	9′6″	2′2″	5′3″	6″	2½″	2½″
	24	4080	21′0″	15′0″	29′6″	8′0″	12′0″	14′6″	10′6″	2′2″	5′3″	6″	2½″	2½″
	26	4420	21′0″	16′0″	31′6″	8′0″	13′0″	14′6″	11′0″	2′2″	5′3″	6″	2½″	2½″
	6	1153	21′0″	6′0″	11′0″	8′0″	3′0″	14′6″	2′6″	2′6″	5′3″	4″	1½″	2 ″
	8	1538	21′0″	7′0″	13′0″	8′0″	4′0″	14′6″	3′6″	2′6″	5′3″	5″	1½″	2 ″
	10	1922	21′0″	8′0″	15′6″	8′0″	5′0″	14′6″	4′6″	2′6″	5′3″	5″	2 ″	2 ″
	12	2306	21′0″	9′0″	17′6″	8′0″	6′0″	14′6″	5′0″	2′6″	5′3″	5″	2 ″	2½″
LH3-C	14	2691	21′0″	10′0″	19′6″	8′0″	7′0″	14′6″	6′0″	2′6″	5′3″	5″	2 ″	2½″
	16	3075	21′0″	11′0″	21′6″	8′0″	8′0″	14′6″	6′6″	2′6″	5′3″	6″	2 ″	2½″
	18	3459	21′0″	12′0″	23′6″	8′0″	9′0″	14′6″	7′6″	2′6″	5′3″	6″	2½″	2½″
	20	3844	21′0″	13′0″	25′6″	8′0″	10′0″	14′6″	8′6″	2′6″	5′3″	6″	2½″	2½″
	22	4228	21′0″	14′0″	27′6″	8′0″	11′0″	14′6″	9′0″	2′6″	5′3″	6″	2½″	2½″
	24	4613	21′0″	15′0″	29′6″	8′0″	12′0″	14′6″	10′0″	2′6″	5′3″	6″	2½″	2½″
	26	4997	21′0″	16′0″	31′6″	8′0″	13′0″	14′6″	11′0″	2′6″	5-3″	6″	2½″	2½″

The sizes of the furnace as given in the above table are so-called standard. The depth of furnace can be increased (by moving the bridge wall back) as follows: Class J—7′0″ to 8′6″; Classes K and L, 8′0″ to 11′0″. Should greater furnace depths be desired, it would require moving the front wall forward and corbelling over to the front drum, or installing a flat arch at this point.

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